

It Is Not Just A Pandemic: How The COVID-19 Mega-Crisis Affects Grief

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Abstract

The COVID-19 pandemic has devastated all aspects of society. Globally, the coronavirus disease has infected and killed millions of people, resulting in a lockdown that disrupted all major financial markets and economies, healthcare systems, and most social opportunities. As attention and resources have been allocated to address these immediate challenges, little is discussed about their impacts on grief, suicide, and mental health. While recent studies show correlations between financial loss and overall psychosocial well-being as a result of the COVID-19 pandemic, there has been little exploration into how these factors drive and impact other interconnected crises. Grounded on system thinking, this paper examines the psychosocial consequences of COVID-19 on marginalized individuals, many of whom have been disproportionately affected by additional and often compounding economic, social, political, and health challenges since the onset of COVID-19. To untangle the complexities and interactions between and across these challenges, it is argued that impacts of COVID-19 far exceed the boundaries of taxonomy used in prior events such as the 2008 financial crisis, or the 2003 SARS epidemic. Therefore, the term *mega-crisis* is used to classify COVID-19 as a system that consists of numerous crises; with each part deeply interconnected to one another, consisting of unique drivers, responses, and impacts.

Keywords: COVID-19, Grief, Suicide, Mega-Crisis, Systems Thinking, Recession, Mental Health

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Introduction

Social and physical distancing. Quarantine. Self-isolation. Flattening the curve. These are terms that have become colloquialisms since the emergence of the COVID-19 pandemic, which has created the greatest global social and economic lockdown in modern history. The first confirmed case in Canada occurred in late January 2020, just under a month after Wuhan, China was identified as the epicentre. In Canada, as of late-November 2020, there are over 330,000 confirmed cases and 12,000 deaths (Government of Canada, 2020d), and over 60,000,000 confirmed cases and 1,400,000 deaths worldwide (WHO, 2020a). COVID-19 has brought the most challenging pandemic the world has faced since the ‘Spanish flu’¹ (1918-1920) and the most severe economic crisis since the Great Depression (1929-1933). COVID-19 and its resulting consequences have exhausted healthcare workers, endangered livelihoods, communities, and disrupted nearly all global markets and economies. In Canada and many parts of the world, COVID-19 has demonstrated multi-layered, far-reaching, and unanticipated consequences beyond the spread of disease and economic downturn. Fear of infection, news of death and personal loss, disruption to routine, social isolation, and uncertainty about the future have developed into grief. Although grieving is a natural response to loss, crises such as the COVID-19 pandemic have further undermined this response and have impacted the collective mental health of billions of people (Pfefferbaum & North, 2020; Statistics Canada, 2020a). Prior works have examined how financial loss can affect grief (Archer & Rhodes, 1993; Ezzy, 1993; Swinburne, 1981), anxiety and depression (Ayers et al., 2012; Burgard et al., 2012; McInerney et al., 2013), and suicide (Chang et al., 2013; Classen & Dunn, 2012; Reeves et al., 2012).

Since the spread of COVID-19, much attention and resources have been allocated to addressing urgent issues related to saving lives and preventing secondary and tertiary waves, all whilst trying to stimulate economies. As such, little is discussed how these issues collectively impact grief, suicide, and overall psychosocial well-being. Mental health is considered in the United Nation’s Sustainable Development Goal (SDG) 3 – *Good Health and Well-being* and specifically, through Target 3.4 - *By 2030, reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being* and Indicator 3.4.2 - *Suicide mortality rate* (UN, 2020a, sec. 4). In their 2020 progress update for SDG 3, the UN has stated that the rate of improvement has been disrupted by the pandemic and will not be sufficient to meet most of its targets (UN, 2020b).

As it is not yet clear how COVID-19 will shape the future, this paper will provide early impressions of how financial loss and uncertainty resulting from the COVID-19 pandemic affect grief. To untangle the complexities and interactions between and across these challenges, it is argued that the impact of COVID-19 far exceeds the boundaries of taxonomy used in prior events such as the 2008 financial crisis or the 2003 SARS epidemic. In both prior events, there existed only one major independent variable (i.e. market crash or viral outbreak). Thus, grounded on systems thinking, the term *mega-crisis* is used to classify COVID-19 as a system that consists of numerous crises; with each part deeply interconnected to one another and consisting of unique drivers, responses, and impacts (Checkland, 1999; Helsloot et al., 2012; Lagadec, 2012). To illustrate how systems thinking and mega-crises can relate to grief resulting from

¹ The author acknowledges this misnomer

COVID-19, marginalization as a public health crisis will be explored.

The COVID-19 Recession

To understand how the COVID-19 recession can impact grief and suicide, it is necessary to explore what sparked the economic downfall. In the past, major global recessions had been triggered by shocks in the banking system such as stock-market crashes or debt defaults (McKinsey & Company, 2020). One study that used textual analysis of news mentions showed that between 1900 and 2019, none of the 1,100 daily stock market moves (up or down) greater than 2.5% were attributed to pandemics or outbreaks (Baker et al., 2020). The COVID-19 recession is different, in that it was triggered by exogenous shocks such as; a pandemic, governmental and intergovernmental lockdown measures, and ensuing shocks to micro and macro supply and demand (Ramelli & Wagner, 2020). Specifically, the COVID-19 recession can be attributed to three major subsequent events that started in early December 2019.

First, the COVID-19 pandemic, caused by severe respiratory syndrome coronavirus 2 (SARS-CoV-2), emerged from Wuhan, China, and spread to the rest of the world. During this time, mounting cases, deaths, and inaction by governments and health agencies spurred fears among investors, which translated into significant market drops. Despite growing health consequences and market shocks experienced worldwide, it was not until early March 2020 that the World Health Organization (WHO) declared COVID-19 a pandemic (WHO, 2020b). This led to the second major event, the global lockdown. This included stay-at-home orders, the freezing of manufacturing, transportation, the collapse of supply chains and retail activity, as well as closing hospitality and tourism industries, to name a few. As global demand and activity across

most sectors fell, the third event, a price dispute between oil producers Saudi Arabia and Russia occurred, which triggered devastating heterogeneous stock price movements across sectors and countries (Ding et al., 2020; World Bank Group, 2020). On March 9, 2020, colloquially known as *Black Monday*, the Dow Jones Industrial Average fell by over 2000 points (-7.8%), while the TSX followed with 1661 points (-10.3%) (Folger-Laronde et al., 2020). A few days later global stock markets crashed, with those in the US suffering the greatest single-day drop since 1987 (CBC, 2020). In March 2020, the US stock market activated the circuit breaker mechanism (trading curb) four times in ten days to stop trading and prevent further losses (Zhang et al., 2020). During the first quarter of 2020, the S&P 500 had fallen by 34% (Ding et al., 2020). By April 2020, the International Monetary Fund (IMF) projected that the pandemic would be the largest and most severe global recession since the Great Depression of the last century (IMF, 2020).

As economists, government leaders and public health experts worldwide work to overcome the impacts of COVID-19, it is clear that preventative measures, responsible investments, and streamlined decision making will be necessary to strengthen health and economic systems in advance of future events (Craven et al., 2020; Statistics Canada, 2020a). Yet historically, such measures have been undervalued and lacked funding as a result, despite being significantly less expensive than projected costs of future pandemics. For instance, the (global) impacts of COVID-19 are estimated to cost between \$9 trillion and \$33 trillion, whereas preventing it would be estimated to cost between \$70 billion and \$120 billion in the first two years, and \$20 billion annually thereafter (Craven et al., 2020).

To address the immediate needs of individuals directly impacted by the COVID-

2020 recession, in April 2020, the Canadian government introduced the Canada Emergency Response Benefit (CERB) for eligible Canadians, and announced research funding for mental health initiatives (Government of Canada, 2020c, 2020a). While it is not yet clear how these initiatives will influence factors such as financial grief and suicide in the short and long term, they are indeed positive short-term measures. In mid-August 2020, the Ontario government's finance minister confirmed that the province is in recession and announced that it would reach a \$38.5 billion deficit by 2021 (Government of Ontario, 2020). With the CERB transitioning in late September to downsized recovery programs, arrival of the second wave of infections, and colder temperatures nearing, many will likely continue to experience wealth insecurity and require mental health support.

Related Literature

COVID-19 has called into question not only the resiliency of healthcare systems, communities, and individuals, but also that of markets, economies, and businesses worldwide (Folger-Laronde et al., 2020). Within days, circumstances altered in such a way that shattered existing norms, and forced fundamental change in discourse, human behaviour, and the social fabric. These emerging norms remain fluid as circumstances change at an alarming speed (Helsloot et al., 2012). COVID-19 is considered a threat to humanity, not only due to the apparent health risks and economic uncertainty, but also for the often-invisible psychosocial impacts such as internalization of fears, anxiety, and grief that are harder to identify, address, and therefore overcome (McIntyre & Lee, 2020; Statistics Canada, 2020a). Within this scope, studies (City of Toronto, 2020a, 2020b; Public Health Ontario, 2020) show that the psychosocial impacts of COVID-19 affect particular

groups of people differently. Specifically, the effects of COVID-19 disproportionately affect marginalized communities, intensifying pre-existing health, economic, political, and social inequalities (City of Toronto, 2020b, 2020a). To identify and address such interrelationships and complexities, systems thinking approach will be used to characterize COVID-19 as a system consisting of numerous crises.

Financial Grief

It is undeniable that physical distancing measures enforced by some world leaders are vital to mitigate risks, save lives, and alleviate the acute challenges faced by hospitals and healthcare providers (Benzell et al., 2020; CDC, 2020; Government of Canada, 2020b). Such measures, while difficult for many due to diverse coping responses, need to continue and are enforced to ensure people and organizations can eventually evolve to establish a new version of social and economic stability. This was made especially poignant when many leaders around the world declared a state of emergency and ordered the closure of social gathering places to reduce the spread of the virus through physical distancing. At a microeconomic level, COVID-19 has caused severe disruptions in areas such as labour, supply chain, consumer spending and affordability, which alone can have negative short- and long-term psychosocial implications on individuals (McIntyre & Lee, 2020; Statistics Canada, 2020a). Scholars have addressed the negative impacts of financial loss on grief (Archer & Rhodes, 1993; Ezzy, 1993; Swinburne, 1981), anxiety and depression (Ayers et al., 2012; Burgard et al., 2012; McInerney et al., 2013), and suicide (Chang et al., 2013; Classen & Dunn, 2012; Reeves et al., 2012). Following the 2008 financial crisis, there was a 13% increase in suicide (over 46,000 reported cases) related to unemployment and income

inequality in the US (Hutchins Coe & Enomoto, 2020).

In April 2020, the International Labour Organization (ILO) estimated that relative to the last quarter of 2019, 5.4% of global working hours (equivalent to 155 million full-time jobs) were lost in the first quarter of 2020 (ILO, 2020). Further, it was estimated that 14% (equivalent to 400 million jobs) would be lost in the second quarter (ILO, 2020). In Canada, between February and April 2020, 5.5 million Canadians (30% of the workforce) were affected either by job loss or reduced hours due to the COVID-19 recession (Statistics Canada, 2020b). In a Canadian nation-wide study, 52% of participants reported that their mental health had worsened since social distancing measures were enforced (Statistics Canada, 2020a). Prior studies have shown that economic hardship leads to substance use disorders, lost or lowered productivity, increase in healthcare costs, and increase in death (Henkel, 2011; Melek et al., 2018; Price et al., 2002; Whiteford et al., 2013). It is estimated that the global annual cost of new-onset and pre-existing cases of depression and anxiety (resulting from COVID-19) will surpass the existing \$1 trillion cost in lost productivity (Hutchins Coe & Enomoto, 2020; WHO, 2019).

A recent national COVID-19 study found that of Canadians who felt depressed, 47% were very worried about finances, 31.5% lost their job or are no longer as a result of the pandemic, and 31.2% had jobs that placed them at high risk of exposure to

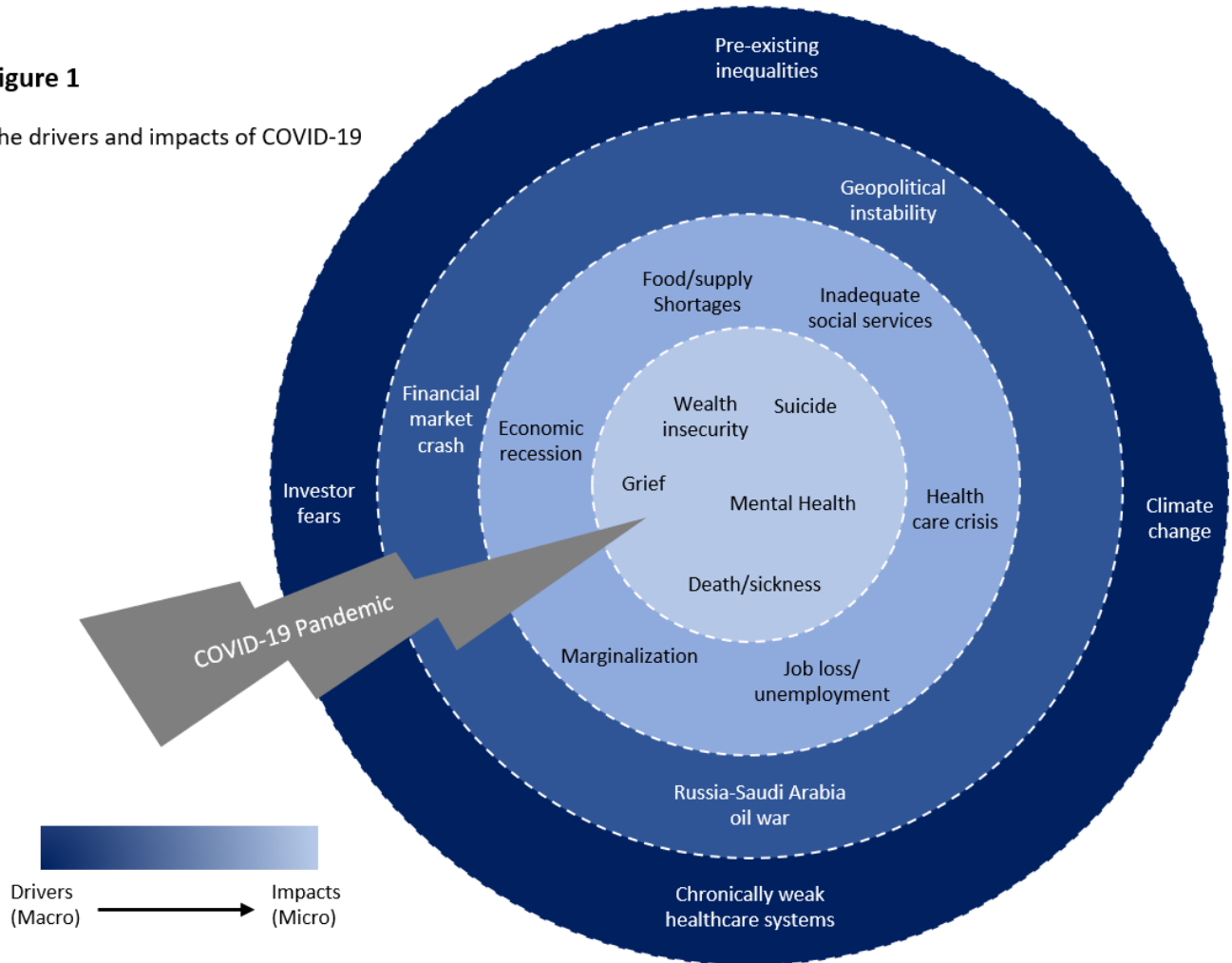
COVID-19 (CAMH, 2020). Another study by McIntyre & Lee (2020) examined the correlation between unemployment caused by the COVID-19 recession and suicides in Canada. Projections were given for two scenarios, the first showing a total of 418 additional suicides if unemployment increases in 2020 (by 1.6%) and 2021 (by 1.2%), and the second by 2114 suicides if increased by 10.7% and 8.9%, respectively (McIntyre & Lee, 2020). This approach is grounded in prior works (Frasquilho et al., 2016; Jahoda, 1988; Ullah, 1990) that indicate how abrupt increases in unemployment can lead to mental health consequences. In the US, it is estimated that a rise in unemployment caused by the COVID-19 recession will result in between 3,235 to 8,164 additional suicides between 2020-2021 (McIntyre & Lee, 2020). While it is too soon to know the full extent and impact of COVID-19 on wellbeing, what is certain is that the world has never faced an event of this nature.

Crisis or Pandemic?

COVID-19 has induced a system of failure of global proportion, with interconnected crises; each with unique drivers, indicators, and consequences. Figure 1: *The drivers and impacts of COVID-19* provide a schematic depiction of how the pandemic ignited and exacerbated crises in areas such as primary and mental healthcare, social services, finance and geopolitics, and supply and demand, to name a few.

Figure 1

The drivers and impacts of COVID-19



Further, figure 1 illustrates how the COVID-19 pandemic (initial driver) disrupted pre-existing macro-level crises, which over time triggered other crises and led to micro-level impacts. Thus, terms such as *pandemic* or *crisis* do not capture the full extent of how COVID-19 has impacted the world. The former signifies a global health epidemic due to the spread of a new disease (WHO, 2010, 2011) and the latter, “a situation that is perceived as difficult...that cannot be defined in time, and that even spatially can recognize different layers/levels of intensity” (WHO, 2014, sec. 36). It is not surprising that on March 11th, 2020, Director-General of the WHO, Dr Tedros Adhanom Ghebreyesus, declared COVID-19 a pandemic and stated that “This is not just a public health crisis, it is a crisis that will touch every sector” (WHO, 2020b, l. 55).

The impacts of COVID-19 far exceed the boundaries of taxonomy and definition used conventionally to address major global events such as the 2008 financial crisis or the 2003 SARS epidemic, consisting of one major independent variable (i.e. market crash or viral infection).

While both these events can be used as a guidepost to study psychosocial impacts, COVID-19 is markedly different; stresses from personal financial instability and uncertainty combined with intensifying fears of contracting or spreading the coronavirus, death, and the lack of physical interaction are undoubtedly more overwhelming and complex to experience and overcome. For instance, unemployment is just one of several moderators of suicide stemming from COVID-19. Further, quarantine measures alone are known to be independent contributors to psychosocial outcomes, as observed during the 2003 SARS epidemic (Brooks et al., 2020; McIntyre & Lee, 2020). To address this gap, systems thinking can be applied to characterize COVID-19 as a *mega-crisis*.

The COVID-19 Mega-Crisis: A Systems Approach

Understanding the impacts of COVID-19 on various facets of life can be understood by systems thinking, a subset of systems theory. Systems thinking at its simplest is a meta-discipline that focuses on the interrelationships between parts, that when combined, form the whole (Checkland, 1999). The early study of systems emerged in the twentieth century from generalizations of organisms in the field of biology, by Ludwig von Bertalanffy, who stated that a whole entity is bounded by space and time, can adapt and survive, can change in environments and that changing one part of the system may affect other parts or the entire system (Checkland, 1999; von Bertalanffy, 1968). Normatively, systems thinking highlights contingent elements of norms as well as the “unintended consequences and contradictory impacts of normative actions (Cordero et al., 2017, p. 522). Sociological interpretations of systems thinking were furthered in seminal pieces by Parsons (1951, 1977) and Luhmann (1984), and more recently in crisis management works by Cooper (2011), Cordero (2016), Cordero et al. (2017), Kjaer & Olsen (2016), and Mascareño et al. (2016).

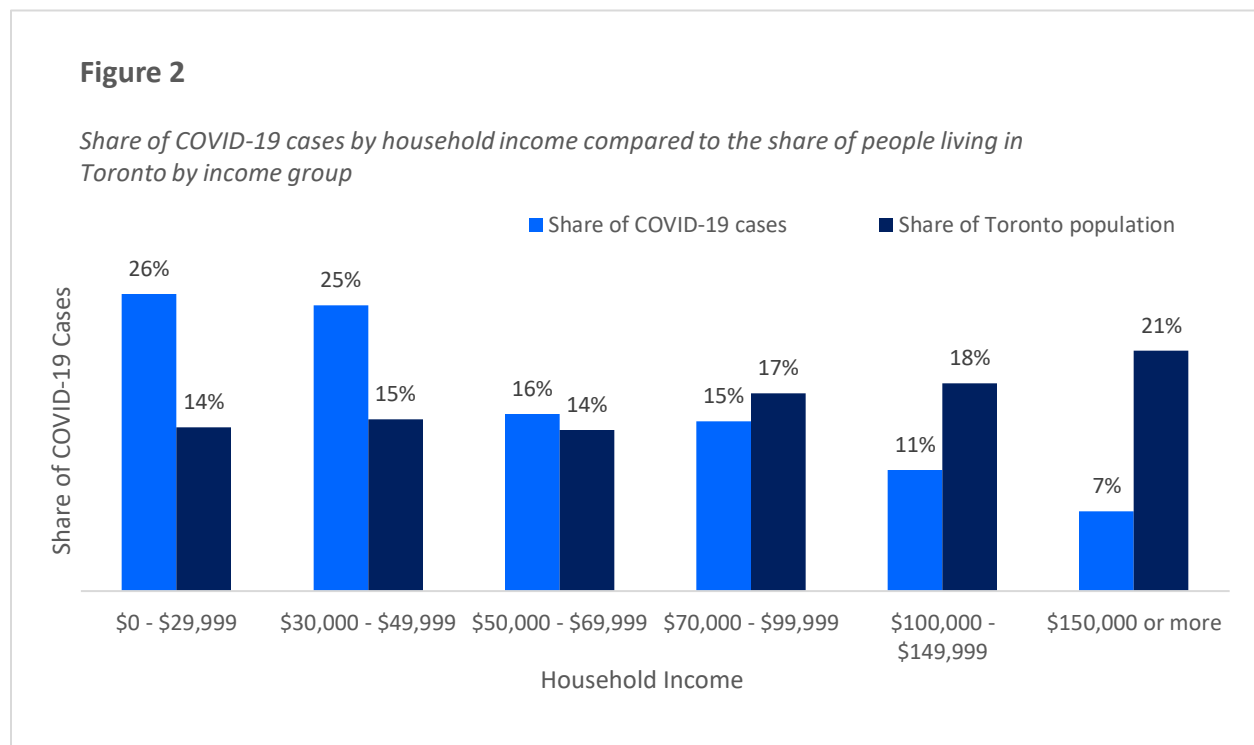
Grounded on this framework to characterize COVID-19 as a system consisting of numerous crises; each deeply interconnected to one another, the term *mega-crisis* is applied. Mega-crisis, a term popularized by Helsloot et al. (2012) refers to an event that can consist of natural disasters, geopolitical conflict, financial crashes, and public health emergencies. During a mega-crisis, it is not that the world is confronted with a bigger crisis or “something more”, but rather “something else” that is far more dynamic, complex, and that lies in society’s blind spot (Lagadec, 2012, p. 12). A mega-crisis is unmapped, unmanageable, and inconceivable using pre-existing mindsets,

strategies, and tools (Helsloot et al., 2012). Categorizing COVID-19 as a mega-crisis therefore helps to identify and untangle the complexities and interdependencies as well as better understand the interplay across various triggers, responses, and consequences of grief.

The COVID-19 mega-crisis amplifies the mental health challenges of marginalized individuals as they experience economic recession and wealth insecurity. Systems thinking sheds light on the drivers and impacts of physical health and mental health as well as the economic consequences that exacerbate the marginalization of members of racialized communities, such as Indigenous and Black people (Florant, Julien, et al., 2020; Wingfield, 2020).

For instance, marginalized individuals face structural disparities that situate them in under-served and densely populated neighbourhoods, which in addition to barriers to COVID-19 testing, increases their risk of infection over other groups (City of Toronto, 2020b; Florant, Noel, et al., 2020; Public Health Ontario, 2020). A recent Toronto Public Health report (Figure 2) revealed that the city’s most marginalized individuals were more likely to contract the virus (City of Toronto, 2020b).

With these correlations in mind, it is not surprising that sentiment by societal actors who suggested ‘the virus does not discriminate’ or political leaders like Canadian Prime Minister Justin Trudeau who stated “We are all in this together” have been



Note. This figure shows data collected (N=3,269) up to September 16, 2020. Adapted from COVID-19: Status of Cases in Toronto. (<https://www.toronto.ca/home/covid-19/covid-19-latest-city-of-toronto-news/covid-19-status-of-cases-in-toronto/>). Copyright 1998-2020 by The City of Toronto.

criticized (Arthur, 2020; CBC News, 2020, para. 1). While it is true that COVID-19 can impact the well being of all humans (if all else is equal), systems thinking exposes the interrelationship between the pandemic, wealth insecurity, and grief, which as a mega-crisis, can disproportionately affect marginalized communities (Arthur, 2020; UN, 2020c). Further exploration about grief, resulting from the mega-crisis, is required to mitigate the various mental health outcomes.

Conclusion

While the future is still unclear, COVID-19 provides an opportunity to collectively reshape how mega-crises can be prevented, mitigated, and overcome. As people adjust to their new restricted circumstances, it is vital that new ways to maintain social connections are discovered and the mental health of communities are strengthened (Florant, Noel, et al., 2020; Novacek et al., 2020). Restrictions to gatherings have kept most people isolated in their homes, with people quickly appreciating the freedoms and the sense of community that was once present.

COVID-19 has highlighted that the world has failed to address fundamental social, health, and economic structural weaknesses and inequalities across various systems, which are deeply interconnected, sensitive to shocks, and slow to recover (Holmes et al., 2020). It is not yet clear how the COVID-19 mega-crisis will shape the lives and livelihoods of billions of people around the world. While there is uncertainty about when and if ‘things will go back to normal’, it is evident that death, suicide, suffering, loneliness, and the fear of supply shortages can take a big toll on grief (Holmes et al., 2020).

The economic ramifications of COVID-19 will likely continue to be experienced mid- to long-term. As Canada

and other nations prepare for secondary and tertiary waves of the pandemic, it will be necessary to develop measures for individuals who may struggle with wealth insecurity and subsequent mental health challenges. As such, it could be advantageous to 1) conduct population scans and mental health service delivery gap analyses, to identify priority areas that require tools and resources; 2) build awareness campaigns surrounding financial grief and develop best practices; 3) allocate additional investments in grief and suicide prevention, job creation, and research focusing on COVID-19-related grief; and 4) continue providing financial safety nets to support individuals and small businesses to build population resiliency and mitigate marginalization. These are undoubtedly the first of many steps required when considering the COVID-19 mega-crisis. Systems thinking can make it possible for decision-makers to reframe and identify a series of complex and interconnected global problems and build resiliency.

This paper explored grief and suicide resulting from the COVID-19 pandemic that impacted the world at the onset of 2020, and specifically from the recession that followed. The paper contributes to the literature by arguing that COVID-19 is not experienced by people as exclusively a pandemic or crisis, but rather a series of crises that serve as parts to the larger system they make up. COVID-19 has impacted the world like no other event, and thus, existing definitions and taxonomies (e.g. crisis and pandemic) to explain it do not suffice. In the context of COVID-19, grief is no longer viewed exclusively as a response to the loss or death of someone. The discourse expands beyond conventional framings to include the multitude of responses and reactions experienced during this mega-crisis. Further, using a systems thinking lens, the term mega-crisis was proposed to signal how COVID-19 is markedly more intense

and complex than prior global events such as the 2008 financial crisis and the 2003 SARS epidemic, which also showed correlation to mental health and suicide. As such, future works can consider frameworks such as system dynamics (Forrester, 1994; Sahin et al., 2020; Sterman, 1994) to model correlations, uncover complexities and consequences, and discover possible solutions.

References

- Archer, J., & Rhodes, V. (1993). The grief process and job loss: A cross-sectional study. *British Journal of Psychology*, *84*(3), 395–410.
<https://doi.org/10.1111/j.2044-8295.1993.tb02491.x>
- Arthur, B. (2020, April 29). We say we're all in this together, but are we? . *The Star*.
<https://www.thestar.com/opinion/star-columnists/2020/04/29/we-say-were-all-in-this-together-but-the-vulnerable-are-getting-hit-hardest-by-the-pandemic.html>
- Ayers, J. W., Althouse, B. M., Allem, J. P., Childers, M. A., Zafar, W., Latkin, C., Ribisl, K. M., & Brownstein, J. S. (2012). Novel surveillance of psychological distress during the great recession. *Journal of Affective Disorders*, *142*(1–3), 323–330.
<https://doi.org/10.1016/j.jad.2012.05.005>
- Baker, S., Bloom, N., Davis, S., Kost, K., Sammon, M., & Viratyosin, T. (2020). The Unprecedented Stock Market Impact of COVID-19. *National Bureau of Economic Research*.
<https://doi.org/10.3386/w26945>
- Benzell, S. G., Collis, A., & Nicolaides, C. (2020). Rationing social contact during the COVID-19 pandemic: Transmission risk and social benefits of US locations. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(26), 14642–14644.
<https://doi.org/10.1073/pnas.2008025117>
- Brooks, S., Webster, R., Smith, L., & Woodland, L. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, *395*, 912–920.
<https://www.sciencedirect.com/science/article/pii/S0140673620304608>
- Burgard, S. A., Kalousova, L., & Seefeldt, K. S. (2012). Perceived Job Insecurity and Health. *Journal of Occupational and Environmental Medicine*, *54*(9), 1101–1106.
<https://doi.org/10.1097/JOM.0b013e3182677dad>
- CAMH. (2020). *COVID-19 National Survey Dashboard*. Centre for Addiction and Mental Health.
<http://www.camh.ca/en/health-info/mental-health-and-covid-19/covid-19-national-survey>
- CBC. (2020, March 19). *In 1987, a triple-digit-point stock market drop was huge* / *CBC Archives*. Canadian Broadcasting Corporation.
<https://www.cbc.ca/archives/in-1987-a-triple-digit-point-stock-market-drop-was-huge-1.5501630>
- CBC News. (2020, March 31). “*We are all in this together*”: Will Trudeau’s actions match his words? . CBC .
<https://www.cbc.ca/news/politics/trudeau-pandemic-covid-coronavirus-media-1.5516383>
- CDC. (2020). *Social Distancing Keep a Safe Distance to Slow the Spread*. Centers for Disease Control and Prevention.
<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>
- Chang, S., Stuckler, D., Yip, P., & Gunnell,

- D. (2013). Impact of 2008 global economic crisis on suicide: Time trend study in 54 countries. *BMJ (Online)*, 347(7925).
<https://doi.org/10.1136/bmj.f5239>
- Checkland, P. (1999). Systems thinking. In W. Currie & B. Galliers (Eds.), *Rethinking management information* (pp. 45–56). Oxford University Press.
https://books.google.ca/books?hl=en&lr=&id=QJJE-p5LdG4C&oi=fnd&pg=PA45&dq=pet+er+checkland+systems+thinking&ots=WobozkzJNt&sig=l4i39eThiR71ityQsP9_y9rS5uk
- City of Toronto. (2020a). *Anti-Black Racism & Mental Health*. City of Toronto.
<https://www.toronto.ca/community-people/get-involved/community/toronto-for-all/anti-black-racism-mental-health/>
- City of Toronto. (2020b). *COVID-19: Status of Cases in Toronto*. City of Toronto.
<https://www.toronto.ca/home/covid-19/covid-19-latest-city-of-toronto-news/covid-19-status-of-cases-in-toronto/>
- Classen, T. J., & Dunn, R. A. (2012). The effect of job loss and unemployment duration on suicide risk in the United States: a new look using mass-layoffs and unemployment duration. *Health Economics*, 21(3), 338–350.
<https://doi.org/10.1002/hec.1719>
- Cooper, M. (2011). Complexity theory after the financial crisis: The death of neoliberalism or the triumph of Hayek? *Journal of Cultural Economy*, 4(4), 371–385.
<https://doi.org/10.1080/17530350.2011.609692>
- Cordero, R. (2016). *Crisis and Critique On the Fragile Foundations of Social Life*. Routledge.
[https://books.google.ca/books?hl=en&lr=&id=NayuDAAAQBAJ&oi=fnd&pg=PP1&dq=Cordero+R+\(2017\)+Crisis+and+Critique:+On+the+Fragile+Foundations+of+Social+Life.+New+York:+Routledge.&ots=fjY6GSSLqv&sig=mKK_2qIJo5hHYZYgfx97JhTkkqI](https://books.google.ca/books?hl=en&lr=&id=NayuDAAAQBAJ&oi=fnd&pg=PP1&dq=Cordero+R+(2017)+Crisis+and+Critique:+On+the+Fragile+Foundations+of+Social+Life.+New+York:+Routledge.&ots=fjY6GSSLqv&sig=mKK_2qIJo5hHYZYgfx97JhTkkqI)
- Cordero, R., Mascareño, A., & Chernilo, D. (2017). On the reflexivity of crises: Lessons from critical theory and systems theory. *European Journal of Social Theory*, 20(4), 511–530.
<https://doi.org/10.1177/1368431016668869>
- Craven, M., Sabow, A., Van der Veken, L., & Wilson, M. (2020). *Not the last pandemic: Investing now to reimagine public-health systems*.
<https://www.mckinsey.com/~media/McKinsey/Industries/Public Sector/Our Insights/Not the last pandemic Investing now to reimagine public health systems/Not-the-last-pandemic-Investing-now-to-reimagine-public-health-systems-F.pdf>
- Ding, W., Levine, R., Lin, C., Xie, W., & Kong, H. (2020). *Corporate Immunity to the COVID-19 Pandemic*.
- Ezzy, D. (1993). Unemployment and mental health: A critical review. *Social Science and Medicine*, 37(1), 41–52.
[https://doi.org/10.1016/0277-9536\(93\)90316-V](https://doi.org/10.1016/0277-9536(93)90316-V)
- Florant, A., Julien, J., Stewart, S., Yancy, N., & Wright, J. (2020). *The case for accelerating financial inclusion in black communities*.
<https://www.mckinsey.com/industries/public-sector/our-insights/the-case-for-accelerating-financial-inclusion-in-black-communities?cid=other-eml-alt-mip-mck&hlkid=44faa602ad9c43489720cd5a7dc1ba46&hctky=11642310&hdpid=6d45119e-6c8f-4945-ba0a-62facedd7471>
- Florant, A., Noel, N., Shelley, S., & Wright, J. (2020). *COVID-19: Investing in*

- black lives and livelihoods*.
<https://www.mckinsey.com/industries/public-sector/our-insights/covid-19-investing-in-black-lives-and-livelihoods?cid=other-eml-alt-mip-mck&hlkid=799d4839479541da88b98b4992a5e3f8&hctky=11642310&hdpid=6d45119e-6c8f-4945-ba0a-62facedd7471>
- Folger-Laronde, Z., Pashang, S., Feor, L., & ElAlfy, A. (2020). ESG ratings and financial performance of exchange-traded funds during the COVID-19 pandemic. *Journal of Sustainable Finance & Investment*, 1–7.
<https://doi.org/10.1080/20430795.2020.1782814>
- Forrester, J. (1994). System dynamics, systems thinking, and soft OR. *System Dynamics Review*, 10(2–3), 245–256.
<https://doi.org/10.1002/sdr.4260100211>
- Frasquilho, D., Matos, M. G., Salonna, F., Guerreiro, D., Storti, C. C., Gaspar, T., & Caldas-De-Almeida, J. M. (2016). Mental health outcomes in times of economic recession: A systematic literature review Health behavior, health promotion and society. *BMC Public Health*, 16(1), 1–40.
<https://doi.org/10.1186/s12889-016-2720-y>
- Government of Canada. (2020a). *Canada Emergency Response Benefit (CERB) with CRA*.
<https://www.canada.ca/en/revenue-agency/services/benefits/apply-for-cerb-with-cra.html>
- Government of Canada. (2020b). *Coronavirus disease (COVID-19): Measures to reduce COVID-19 in your community - Canada.ca*.
<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks/measures-reduce-community.html>
- Government of Canada. (2020c). *COVID-19 and Mental Health (CMH) Initiative: Funding*.
- Government of Canada. (2020d, October 22). *Coronavirus disease (COVID-19): Outbreak update*.
<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection.html?topic=tilelink>
- Government of Ontario. (2020, August 12). *Newsroom : Ontario Releases 2020-21 First Quarter Finances*.
<https://news.ontario.ca/mof/en/2020/08/ontario-releases-2020-21-first-quarter-finances.html>
- Helsloot, I., Boin, A., Jacobs, B., & Comfort, L. (2012). *Mega-crises: Understanding the prospects, nature, characteristics, and the effects of cataclysmic events*. Charles C Thomas Pub Ltd.
- Henkel, D. (2011). Unemployment and Substance Use: A Review of the Literature (1990-2010). *Current Drug Abuse Reviews*, 4(1), 4–27.
- Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., Ballard, C., Christensen, H., Cohen Silver, R., Everall, I., Ford, T., John, A., Kabir, T., King, K., Madan, I., Michie, S., Przybylski, A. K., Shafran, R., Sweeney, A., ... Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. In *The Lancet Psychiatry*.
[https://doi.org/10.1016/S2215-0366\(20\)30168-1](https://doi.org/10.1016/S2215-0366(20)30168-1)
- Hutchins Coe, E., & Enomoto, K. (2020, April 2). *Returning to resilience: The impact of COVID-19 on mental health and substance use*. McKinsey & Company.
<https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/returning-to-resilience-the->

- impact-of-covid-19-on-behavioral-health#
- ILO. (2020). *ILO Monitor: COVID-19 and the world of work. Fifth edition.* https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_749399.pdf
- IMF. (2020, April 14). *The Great Lockdown: Worst Economic Downturn Since the Great Depression – IMF Blog.* IMF Blog. <https://blogs.imf.org/2020/04/14/the-great-lockdown-worst-economic-downturn-since-the-great-depression/>
- Jahoda, M. (1988). Economic Recession and Mental Health: Some Conceptual Issues. *Journal of Social Issues*, 44(4), 13–23. <https://doi.org/10.1111/j.1540-4560.1988.tb02089.x>
- Kjaer, P., & Olsen, N. (2016). *Critical Theories of Crisis in Europe.* Rowman & Littlefield International. <http://library.oapen.org/handle/20.500.12657/32367>
- Lagadec, P. (2012). The Unkown Territory of Meg-Crisis: In Search of Conceptual and Strategic Breakthroughs. In I. Helsloot, A. Boin, B. Jacobs, & L. K. Comfort (Eds.), *Mega-Crisis: Understanding the Nature, Characteristics and the Effects of Cataclysmic Events* (pp. 12–24). Charles C Thomas Pub Ltd.
- Luhmann, N. (1984). *Social systems : floor plan of a general theory.* Suhrkamp. <https://ixtheo.de/Record/040204065>
- Mascareño, A., Goles, E., & Ruz, G. A. (2016). Crisis in complex social systems: A social theory view illustrated with the chilean case. *Complexity*, 21, 13–23. <https://doi.org/10.1002/cplx.21778>
- McInerney, M., Mellor, J. M., & Nicholas, L. H. (2013). Recession depression: Mental health effects of the 2008 stock market crash. *Journal of Health Economics*, 32(6), 1090–1104. <https://doi.org/10.1016/j.jhealeco.2013.09.002>
- McIntyre, R. S., & Lee, Y. (2020). Projected increases in suicide in Canada as a consequence of COVID-19. *Psychiatry Research*, 290. <https://doi.org/10.1016/j.psychres.2020.113104>
- McKinsey & Company. (2020, July 28). *Banking system resilience and COVID-19 .* McKinsey & Company. <https://www.mckinsey.com/industries/financial-services/our-insights/banking-system-resilience-in-the-time-of-covid-19#>
- Melek, S. P., Maaa, F., Norris, D. T., Paulus, J., Matthews, K., Maaa, A., Weaver, A., & Davenport, S. (2018). *Potential economic impact of integrated medical-behavioral healthcare.* <https://milliman-cdn.azureedge.net/-/media/milliman/importedfiles/uploadedfiles/insight/2018/potential-economic-impact-integrated-healthcare.aspx>
- Novacek, D. M., Hampton-Anderson, J. N., Ebor, M. T., Loeb, T. B., & Wyatt, G. E. (2020). Mental Health Ramifications of the COVID-19 Pandemic for Black Americans: Clinical and Research Recommendations. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(5), 449. <https://doi.org/10.1037/tra0000796>
- Parsons, T. (1951). *The Social System.* Routledge and Kegan Paul Ltd.
- Parsons, T. (1977). *Social systems and the evolution of action theory* (Vol. 62). Free Press.
- Pfefferbaum, B., & North, C. S. (2020). Mental Health and the Covid-19 Pandemic. *New England Journal of Medicine.* <https://doi.org/10.1056/nejmp2008017>
- Price, R. H., Choi, J. N., & Vinokur, A. D. (2002). Links in the Chain of Adversity

- Following Job Loss: How Financial Strain and Loss of Personal Control Lead to Depression, Impaired Functioning, and Poor Health. *Journal of Occupational Health Psychology*, 7(4), 302–312.
<https://doi.org/10.1037/1076-8998.7.4.302>
- Public Health Ontario. (2020). *COVID-19 in Ontario – A Focus on Diversity*.
- Ramelli, S., & Wagner, A. (2020). Feverish Stock Price Reactions to COVID-19. *The Review of Corporate Finance Studies*.
<https://doi.org/10.1093/rcfs/cfaa012>
- Reeves, A., Stuckler, D., McKee, M., Gunnell, D., Chang, S. Sen, & Basu, S. (2012). Increase in state suicide rates in the USA during economic recession. In *The Lancet* (Vol. 380, Issue 9856, pp. 1813–1814). Elsevier.
[https://doi.org/10.1016/S0140-6736\(12\)61910-2](https://doi.org/10.1016/S0140-6736(12)61910-2)
- Sahin, O., Salim, H., Suprun, E., Richards, R., MacAskill, S., Heilgeist, S., Rutherford, S., Stewart, R. A., & Beal, C. D. (2020). Developing a Preliminary Causal Loop Diagram for Understanding the Wicked Complexity of the COVID-19 Pandemic. *Systems*.
<https://doi.org/10.3390/systems8020020>
- Statistics Canada. (2020a). Canadians' mental health during the COVID-19 pandemic. In *Statistics Canada*.
<https://www150.statcan.gc.ca/n1/daily-quotidien/200527/dq200527b-eng.htm>
- Statistics Canada. (2020b, July 10). *COVID-19 and the labour market in June 2020*. Statistics Canada.
<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2020047-eng.htm>
- Sterman, J. (1994). Learning in and about complex systems. *System Dynamics Review*, 10(2–3), 291–330.
<https://doi.org/10.1002/sdr.4260100214>
- Swinburne, P. (1981). The psychological impact of unemployment on managers and professional staff. *Journal of Occupational Psychology*, 54(1), 47–64. <https://doi.org/10.1111/j.2044-8325.1981.tb00043.x>
- Ullah, P. (1990). The association between income, financial strain and psychological well-being among unemployed youths. *Journal of Occupational Psychology*, 63(4), 317–330. <https://doi.org/10.1111/j.2044-8325.1990.tb00533.x>
- UN. (2020a). *Goal 3: Ensure healthy lives and promote well-being for all at all ages*. United Nations Department of Economic and Social Affairs.
<https://sdgs.un.org/goals/goal3>
- UN. (2020b). *Goal 3 | Progress and info*.
<https://sdgs.un.org/goals/goal3>
- UN. (2020c, April 23). *We are all in this Together: Human Rights and COVID-19 Response and Recovery | United Nations*. United Nations; United Nations. <https://www.un.org/en/un-coronavirus-communications-team/we-are-all-together-human-rights-and-covid-19-response-and>
- von Bertalanffy, L. (1968). *General System Theory: Foundations, Development, Applications*. George Braziller Inc.
- Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., Charlson, F. J., Norman, R. E., Flaxman, A. D., Johns, N., Burstein, R., Murray, C. J. L., & Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. *The Lancet*, 382(9904), 1575–1586.
[https://doi.org/10.1016/S0140-6736\(13\)61611-6](https://doi.org/10.1016/S0140-6736(13)61611-6)
- WHO. (2010, February 24). *What is a pandemic?* World Health Organization. <http://www.who.int/csr/disease/swinefl>

- u/frequently_asked_questions/pandemic/en/
- WHO. (2011). *The classical definition of a pandemic is not elusive*. WHO; World Health Organization.
- WHO. (2014). *Definitions: emergencies*. World Health Organization.
<https://www.who.int/hac/about/definitions/en/>
- WHO. (2019, May). *Mental health in the workplace*. BioMed Central Ltd.
<https://doi.org/10.1186/1471-244X-14-131>
- WHO. (2020a). *WHO Coronavirus Disease (COVID-19) Dashboard*.
<https://covid19.who.int/>
- WHO. (2020b, March 11). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*.
<https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- Wingfield, A. (2020, March). *The Disproportionate Impact of COVID-19 on Black Health Care Workers in the U.S.* Harvard Business Publishing.
<https://hbr.org/2020/05/the-disproportionate-impact-of-covid-19-on-black-health-care-workers-in-the-u-s>
- World Bank Group. (2020). *Global Economic Prospects, June 2020*. The World Bank.
<https://doi.org/10.1596/978-1-4648-1553-9>
- Zhang, D., Hu, M., & Ji, Q. (2020). Financial markets under the global pandemic of COVID-19. *Finance Research Letters*.
<https://doi.org/10.1016/j.frl.2020.101528>

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